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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/690,820	10/23/2003	Yun-gi Kim	1293.1881	5435

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EXAMINER

STEPHENS, JUANITA DIONNE

ART UNIT PAPER NUMBER

2853

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/690,820

Applicant(s)

KIM, YUN-GI

Examiner

Juanita D. Stephens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on Election filed 4/8/2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 9-12 and 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of the invention of Group I, claims 1-8 and 13-15 in the reply filed on 4/8/2005 is acknowledged.
2. Claims 9-12 and 16-19 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 4/8/2005.

### ***Specification***

3. The disclosure is objected to because of the following informalities:  
On page 7, [0031], line 7 replace "nozzle 103" with --nozzle 130--.  
Appropriate correction is required.

### ***Claim Objections***

4. Claim 2 is objected to because of the following informalities:  
In claim 2, the recitation of "the first and second connection portions" have not been previously recited, therefore, replace "the" with --a--.  
Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or
- (2) a patent granted on an application for patent by another filed in the United States before

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the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3, 6-8, and 13-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ozaki et al. (US 6,578,951 B2).

Ozaki et al. discloses an ink-jet printhead (Fig. 2) comprising: 1) a substrate (102) (col 3, Ins 51-52), 2) a first insulating layer (103) (col 3, Ins 54-55), 3) first (105) and second (107) conductors on the first insulating layer separated from each other (col 4, Ins 31-33 and Ins 43-44), 4) a heater (110) including a plurality of conductor connection layers (104, 106, 111) electrically connecting the first (105) and second (107) conductors to each other, and between the first and second conductors, 5) a second insulating layer (106) (col 4, Ins 36-38) between the first and second conductors and between the plurality of conductors connection layers, 6) a barrier wall (liquid path wall 1105) (col 5, Ins 32) on the substrate (1102 of Fig.8) and defining an ink chamber (formed by liquid paths 1110) with ink to be ejected (col 5, Ins 40-51), 7) nozzle plate (ceiling plate (1106) on the barrier wall (1105) , forming upper walls of the ink chamber and in which nozzles (discharge ports 111) through which ink (liquid 1112) filled in the ink chamber is ejected are formed (col 5, Ins 40-51), 8) an interface (portion of layers 104, 106 and 111 that connect the conductors 1-5 and 107, as seen in Fig. 2)) formed by in at least one of the first and second connection portions connecting each of the first and second conductors connected to the conductor connection layers, 9) wherein the conductor connection layers (104, 106, 111) extend from one of the first and second conductors (as seen in Fig. 2),

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10) an anti-cavitation layer (Ta layer 109) on the passivation layer (SiN layer 108) (col 4, Ins 51-52), 11) wherein the connected conductors form a heater (110) such that an additional resistance material need not be provided, and 12) a plurality of insulating layers (SiO<sub>2</sub> film 103, SiO layer 104, SiN layer 106 and 108, and Ta layer 109), wherein a first one of the insulating layers (103) separates the substrate (102) from one of the conductors and serves as an adiabatic layer preventing heat generated in the heater from conducting toward the substrate (col 3, Ins 53-54) and a second one of the insulating layers (106) separates one of the conductors from another of the conductors.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4-5, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ozaki et al. (US 6,578,951 B2) in view of Kohno et al. (US 6,224,194 B1)

Ozaki et al. discloses the claimed invention, with the exception of **1)** wherein the conductor connection layers are formed of Ti, TiN, Ta, or TaN, **2)** a passivation layer on an entire surface of the substrate covering the first and second conductors, and **3)** wherein the connection layers are made of a barrier metal. Kohno et al. at least teaches wherein the conductor connection layers

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(11) are formed of Ti, TiN, Ta, or TaN, (col 11, lns 26-29), a passivation layer (SiO layer 18) on an entire surface of the substrate covering the first and second conductors (col 11 lns 60-63), and wherein the connection layers are made of a barrier metal (col 11, lns 26-29). It would have been obvious at the time the invention was made to a person having ordinary skill in the ink-jet art to modify Ozaki et al. by providing the barrier metal layer and passivation layer as taught to be old by Kohno et al. for the purpose of suppressing irregularities in the resistance values of the heaters, thus yielding images with high quality.

***Allowable Subject Matter***

9. Claims 7 and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not teach, suggest or render obvious the limitation of wherein the resistance required for the heater is substantially the total resistance of the conductor connection layers. This invention solves the problem of providing a heater and conductor formed of the same metallic material.

The prior art does not teach, suggest or render obvious the limitation of wherein a number of the plurality of conductor connection layers varies with the resistance required for the heater. This invention solves the problem of providing a heater and conductor formed of the same metallic material.

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### **Contact Information**

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Juanita D. Stephens whose telephone number is (571) 272-2153. The examiner can normally be reached on Flex.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



April 28, 2005

Juanita D. Stephens  
Primary Examiner  
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